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BULLETIN

OF

THE NEW YORK ACADEMY OF MEDICINE

SEPTEMBER, 1930

INCORPORATED 1851

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BULLETIN OF
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THE EYE IN RELATION TO GENERAL MEDICINE

EDGAR S. THOMSON

Surgeon, Manhattan Eye, Ear and Throat Hospital

Delivered, January 24, 1930, in the Friday Afternoon Lecture Series of The New York Academy of Medicine.

The eye, in many general diseases, gives important indications. Its tissues are highly specialized and susceptible to irritants, and the extent and progress of the general condition can often be judged from the local appearance. Many functional conditions give irritative symptoms, the most important of which are eye-aches or headaches.

The subject of headaches caused by eye irritation is one which has received a great deal of attention in the literature. All sorts of attempts have been made at classification with, on the whole, rather confusing results. A recent paper by de Schweinitz (*Journal of the Medical Association of Georgia,* vol. xviii, No. 2, February, 1929) is notable and one that I cannot too highly recommend. On the present occasion I shall try to give a few practical ideas as to what types of eye disturbances cause headaches, so that, reasoning from the other end of the proposition, a certain type of headache may lead one to suspect eye trouble.

Eye headaches come most commonly from hyperopia, with or without astigmatism, although mixed astigmatism is a potent cause but occurs less commonly. Myopic astigmatism may also give headaches; while simple myopia, as a rule, does not. The increased effort that the ciliary

muscle makes in attempting to focus the astigmatic eye, and particularly the *unnatural* effort, leads to stiffness of the ciliary muscle and finally to cramp. This cramp, or the astigmatism causing it, leads to blurring of vision, in material degrees of error, while in lower degrees the muscle may strain over the error, so that the vision remains normal, while the muscle itself is cramped and sore. The first reaction is in the ciliary muscle, and the eyes themselves ache, while later on the irritation is reflected and becomes a frontal headache, an occipital headache, or even a more distant reflex. Time, therefore, is a very important element in the case, and in children of five or six years old that have not begun to co-ordinate, it is very unusual to see a well marked headache, while muscular ache in the eyes is the rule in older astigmatic cases. If the child goes on straining to an older period, say eight or nine, headaches become increasingly common. Naturally, they are made worse by reading or any use of the eyes at the near point, and are apt to occur late in the day and not early in the morning after the night's rest. If the strain goes on getting worse the cramp may become so chronic that headaches most of the time may supervene; but at the present time this is not often allowed to occur.

A rather useful test is the application of hot fomentations to the eyes. If the headache is from eye-strain and is just beginning, the heat is very apt to relieve it. The severity of the headache is due partly to the amount of the error and the time the eye-strain has gone on, and also to the degree of stability of the individual's nervous system. A robust phlegmatic child will be more apt to have an eye-ache for a time, while a nervous unstable child may have relatively few symptoms of eye-strain but plunge rapidly into the more general reflex of headache.

Disturbance of the muscle balance between the two eyes can also give headaches. Exophoria or convergence weakness is a frequent cause and often occurs where the vision is normal. Vertical disturbance or hyperphoria,

while not a very common occurrence in a number of individuals, is nevertheless a very important source of irritation when it does occur. The effort of pulling one eye down, or the other eye up, it may be, is an entirely abnormal one and is very apt to cause dizziness or vertigo. In fact, while this symptom may rarely come from astigmatism, it is most apt to come from hyperphoria and is readily corrected by the wearing of a proper prism or by a muscle operation designed to bring the eyes on the same line.

Dizziness may also occur in cases of external muscle paralysis of the third, fourth, or sixth nerves. These cases are always accompanied by double vision and are really due to a toxic inflammation of the nerve. A large proportion of the third nerve cases are luetic in origin; the eye is turned down and out, the pupil is dilated, and the upper lid droops. The fourth and especially the sixth nerve paralysis may come from a great variety of causes—sleeping sickness, suppurative middle-ear disease, tooth abscess, cerebral neoplasm, diabetes, etc. Treatment of the underlying condition often clears up the paralysis perfectly.

Conjunctival inflammations fall into two broad classes, infections, and inflammations due to chemical disturbances in the blood. Infections are always characterized by pus formation; the more severe infections have profuse discharge of thick creamy pus, the milder ones have less; but it is perhaps not too sweeping an assertion to state that every true infection has some amount of pus discharge.

On the other hand, a great many persons have reflex congestion of the conjunctiva from eye-strain, or smarting and congestion where no eye-strain exists but where chemical faults occur. In such cases, the normal use of the eyes makes them smart. The mucous membrane of the lids is red and hypertrophic and at times has a scanty discharge. The commonest example of this is in the full-blooded high living individual, who shows a general dilation of the

capillaries of the face. Such cases always have to have astringents applied to the lids in order to relieve the hypertrophy, but a satisfactory result can seldom be attained by local means alone. The chemical examination of the blood will usually show some disturbance—as high urea or high uric acid—and until the digestive condition is corrected a certain tendency to recurrence is often shown.

Sub-conjunctival hemorrhage is a common condition and is often ignored. It is frequently, however, a symptom of circulatory irritability and should always be considered. It may be due to high blood pressure with arteriosclerosis or, on the other hand, may be due to only a temporary rise of pressure in an otherwise healthy person. Frequently the blood pressure is not taken until some hours after the attack and no elevation is found. It is therefore assumed that the hemorrhage is purely an accident. This is often not the fact. A certain amount of fatigue and irritability can often be assumed and—unless an unusual strain, like an attack of coughing in whooping cough is known to have occurred—such patients will bear watching and regulation.

Corneal disease, except for a few special forms, always means depression or even malnutrition. On account of the peculiar lymph circulation, ulceration occurs very readily in those who are below par. Regulation of the digestion and tonic treatment are almost always indicated. In certain types of corneal ulcerations in elderly people, alcohol is almost an essential; it is best administered in the form of milk punch; its rapidity of action gives it a place occupied by no other drug; iron and strychnine, which have a certain value, both are too slow in their effects. Of course local treatment of the ulcer is highly important.

Iritis and cyclitis, inflammation of the iris and ciliary body, are invariably due to a constitutional toxin; the tissue is spongy, sensitive, and reactive—and the vascular reaction to a toxin is very severe. The resulting symptoms of redness, pain, plastic deposit, while subject to a

great amount of variation, may be quite severe and by the degree of their severity indicate the amount of intoxication. Twenty-five years ago it was considered that a large proportion of both these diseases were syphilitic in origin, and this is probably true. Many writers gave the proportion about as follows:

Syphilis, 75 per cent.
Rheumatism, 23 per cent.
Tuberculosis and other rarer forms, 2 per cent.

We saw two special types of specific iritis: that appearing in the secondary stage, which was simply a severe plastic form; and that occurring in the later stages, which was characterized by a reddish mass on the pupillary margin, which was variously assumed to be a condyloma or a gumma. No doubt these forms still exist in certain localities, but the advent of the Wassermann test and the intravenous treatment with salvarsan have made both forms almost a rarity in our practice here. The early and positive diagnosis of syphilis, followed by efficient treatment has given a totally different complexion to the question of its clinical importance. On the other hand, it has been repeatedly pointed out, especially by English and American writers, that the word rheumatism was merely a convenient scrap-basket for a great variety of toxic conditions, and that the only true rheumatic iritis was the form that occurred during an attack of acute rheumatism, which is rather rare. This is undoubtedly correct, and iritis and cyclitis, in combination as they frequently are, or separately, are to-day most often caused by focal or digestive infections. There are a few rare forms, such as tubercular or leprous iritis, where the germ occurs in the tissue itself; but in the vast majority of cases seen in this locality search for a cause resolves itself into a blood test and then a search for local infections.

I designedly pass over those forms which occur in meningitis and other infectious diseases where the cause is obvious. Undoubtedly a simple digestive sepsis can give an

inflammation of this type. It usually occurs in those who are much depressed and perhaps anemic, and tests of the urine, chemistry of the blood and perhaps also of the feces will furnish definite indications. It is most apt to be bilateral, as one would expect, and may be accompanied by low grade arthritis of the small joints or other evidences of a general chemical disorder. However, when a patient in apparently good health suddenly develops an iritis or irido-cyclitis in one eye, and the general tests—kidney, blood, intestines—show nothing abnormal, the search for a cause usually centers in the infections that occur in the head. There are a few rare infections that may occur in other parts of the body—prostate, appendix, genital tract, as from chronic gonorrheal infections, etc.—but these are rarely met with and it is only necessary to investigate to find the cause.

Head infections, however, are frequently latent, yet they form a large proportion of the cases. There is no question that a tooth abscess may cause an iritis, but that it often does so is very doubtful. The pus occurs in very small quantity in an apical abscess and is often confined in a rigid bony space where absorption must be very difficult. It is conceivable that under certain circumstances absorption from pyorrhea may occur in sufficient amount to lead to an infection of the iris, but under ordinary circumstances the pus drains away and no infection occurs. I do not wish to give the impression that examination of the teeth is not important; where other infections exist, there is always a question as to whether or not a diseased tooth may be adding to the sensitization of the patient, and where the question is of sufficient importance a diseased tooth should be extracted. As a sole and primary cause of iritis, however, it does seem that the rôle of the teeth has been somewhat "over-played." Too often the extraction of a diseased tooth has no effect whatever on the process.

The tonsillar question is a very different story. It is well known that the tonsils harbor infection very readily and that when they are once infected they seldom free

themselves from the infection. Constitutional effects from tonsillar infection are too well known to receive more than passing mention. It follows then that iritis from tonsillar infection is a most reasonable thing to expect, and as a matter of fact it does occur quite frequently. The difficult question to decide is when the tonsils are infected and how much they participate in the process as compared with the upper nasal air chambers, or the sinuses. It is, I think, quite generally agreed that the presence of bacteria on the tonsil means little, except that some strains of bacteria are undoubtedly more deserving of being objects of suspicion than are others. Enlargement of the tonsils and a history of tonsillar attacks, particularly abscess, are significant; and the ability of the tonsil to exude pus on pressure is perhaps the most significant symptom of all.

Iritis and cyclitis may be caused by a purulent antrum —a condition which must be considered a focal infection. Purulent disease of the ethmoids and sphenoid can also act as a cause, and do so chiefly when pus develops in a confined cell. In both of these cases a rhinological examination will most probably show pus coming from the affected spot.

There is, however, another type of sinus disease which we must now consider. Where the case is frankly a purulent one, the mucous membrane is apt to thicken so as to interpose a wall of resistance to further infection. In certain cases the infection seems to extend beneath the mucous membrane, and the chief changes are in the bone. We have then a low-grade osteitis which is capable of causing iritis, cyclitis, choroiditis, retinitis, or neuritis. There are few definite symptoms in these cases and x-ray findings are of little help. Still, when a sinus operation is done the eye condition at once clears up, showing conclusively that the eye infection came from the sinuses. The diagnosis is the difficult part and must rest upon the type of the eye inflammation and the absence of other causal findings. This is a matter of close co-operation between the ophthalmologist and the rhinologist. Whether the tonsils or the sinuses

become infected first and which infects the others, are difficult questions. According to most of the opinions in my own circles, the tonsils are the first infected, though the more one studies head infections the more one is impressed with the feeling that they are much more general than local. At the same time, they frequently center at one spot and operation on this spot enables the patient to master the rest of the process himself. For instance, we frequently see badly infected tonsils in the presence of a low-grade ethmoiditis, and after the tonsils are removed the ethmoiditis subsides. What should be done surgically is often a very important decision and one which rests chiefly with the rhinologist. The surgeons whose judgment is most to be valued, I think, are inclined to take out all manifestly diseased tissues and to make as clean a sweep of the infected material as possibly. In many instances this stops the infection and the patient has no further trouble. It must always be remembered, however, that the operation does not always secure bacterial immunity, and, after the tonsils are removed and the sinuses exenterated, reinfection can occur and immunity must be secured by other measures—vaccines, general treatment, change of climate, etc.

What has been said concerning the iris applies, to a large extent, to the similar tissue, the choroid. Before the Wassermann test and the salvarsan treatment, many cases of scattered or disseminated choroiditis were observed that were undoubtedly of specific origin. We do not see so many of these now-a-days and yet we see plenty of cases of choroiditis. The causative factors seem to be digestive or focal infections; the choroid seems rather more susceptible to digestive changes than the iris and ciliary body. Again I pass over infectious diseases, as meningitis, since the causation here is well known.

Aside from the ophthalmological appearance, the most striking symptom of choroiditis is haziness in the eye or floating spots before the vision. These spots are inflammatory and are dense enough to obscure the vision, whereas

the tiny normal floating spots which are known as "muscae" are transparent. The myopic eye is particularly predisposed to choroiditis on account of the fact that the tissue is stretched and its blood and lymph circulation are materially interfered with. It was formerly supposed that the choroiditis of myopia was largely a mechanical affair and was due to tearing of the tissue as the eye elongated. However, it seems much more probable that it is a toxic process in a tissue which has been rendered vulnerable. The search for the toxic cause must be thorough and very exhaustive, as a slight disturbance can cause a marked process in the myopic eye when it would cause much less severe a process in a normal eye.

Choroiditis occurs at times in young children and is due to digestive disturbances—acidosis, etc. Unfortunately, it frequently passes unnoticed, and later a spot of retinochoroidal atrophy develops which, if it be near the macula, will affect vision seriously and permanently. A spot of choroiditis of any degree of severity almost always destroys the overlying retina. Choroiditis can also be caused by infection from the head—tonsils, sinuses, or teeth—as has been mentioned.

A word should perhaps be said concerning glaucoma. This disease occurs chiefly in those beyond fifty years of age but can occur at any age. It varies from the most quiet chronic types with no pain, to the most acute and violent with most intense pain. The more severe the process the more apt is the pain to be located in the eye. There are many chronic cases, however, where the pain may be in the forehead or even reflected to other parts of the head. It always occurs in the same manner, usually at the end of a day's work when a certain amount of fatigue is present.

The retina is a very highly specialized form of nerve tissue and has a rather peculiar list of susceptibilities. Perhaps the most important is the retinitis which accompanies chronic kidney disease. It is always a late symptom and the exudates are distributed in a "star" shaped figure

in the macula. This appearance is always characteristic; and yet, on the other hand, Bright's retinitis may assume other forms—in fact the retinal spots may be scattered on the outlying parts of the fundus and be very small and inconspicuous. Any form of retinitis occurring late, as it does, in chronic nephritis is of very serious prognostic import. It seems to indicate severe toxic saturation, and the patient frequently dies in from three to six months after the onset of the retinitis. Hemorrhages in connection with the retinitis are generally considered to add to the gravity of the prognosis as they indicate vascular disease. I do not wish to make the bad prognosis too sweeping, as I have seen a typical case arrested by careful general treatment, and now—three years after the onset—the patient seems to be holding the kidney process; at least she is not getting worse rapidly and the retinitis has cleared up, with restoration of vision to normal in one eye.

There is also another type of cases in which the typical albuminuric retinitis occurs, and that is the kidney attacks of pregnancy. These attacks come on late and occur in those who have never had any indication of Bright's disease. They go on rapidly to uremia, and if not interfered with promptly may be fatal in their results—or at least very destructive to the retinal tissue. They generally require the induction of labor, after which the retinitis clears up with great promptness and in many instances normal vision is restored. While complete recovery is the rule in those who have previously been free from kidney inflammation, some internists think that deterioration occurs in a fairly large percentage of the Bright's retinitis of pregnancy cases; and that if they can be followed up for several years, recurrent kidney attacks will be found to have occurred.

Retinitis in a rather characteristic form occurs late in diabetes; while it was never considered a serious symptom, as was the retinitis of chronic nephritis, it nevertheless was apt to be followed by a fatal termination of the disease

in from one to two years. Insulin, however, has changed all this. Even cases with a marked retinitis can go on much longer than was formerly the case—how much longer, I cannot with certainty say. They do not succeed in absorbing the exudates and, as a rule, the vision stays below normal.

Retinitis also occurs in focal infections from the tonsils, sinuses, or teeth, as has been mentioned. The ophthalmoscopic diagnosis under these circumstances is a very important one.

Hemorrhage in the retina is a very important condition from both its local and general significance. If it is caused by arteriosclerosis, other signs of vascular degeneration are apt to be present—tortuosity of the vessels, "beading" of the arteries, peri-vasculitis, etc. If these signs are absent, and particularly if the individual is in good health, with normal blood pressure, etc., we may have reason to assume that the hemorrhage was of accidental origin—which usually means a rise of blood pressure from some unusual strain. Hemorrhages occur in the retina also as an accompaniment of a retinitis. The hemorrhage is often the most conspicuous feature, but a careful search should also be made for inflammatory exudates, areas of edema, and other signs of a plastic inflammatory process. The hemorrhages are the natural accompaniment of such a process.

I should like, in this connection, to say a few words on a much vexed question—the use of the ophthalmoscope by the general practitioner. It is undoubtedly important to avail ourselves of all possible means of diagnosis, and if the general practitioner could be well taught in ophthalmoscopy and could have enough experience to analyze what he sees in the fundus of the eye, much information of value could be obtained. The eye-ground is often a very good barometer as to the condition of the circulation and nervous system, and certain toxic and digestive changes at times give very important indications. However, ophthal-

moscopy is not to be learned in a day, and a vast amount of clinical experience is necessary to make one's opinion worth anything at all. There is a tremendous variation in the normal, and an infinite variety in the abnormal. Every ophthalmologist constantly sees absurd mistakes made by those who have only a little knowledge of the subject, and I would urge those who wish to use the instrument to advantage, to approach the subject with due reverence and to back up their opinion by large clinical observation.

The optic nerve in the main is sensitive to the same type of toxins as is the retina. Optic neuritis may be caused by syphilis, acute infectious diseases—of which meningitis is the most common—certain digestive toxemias, focal infections from the sinuses or tonsils, etc. The form of neuritis from disease of the sphenoidal sinus is perhaps at times due to a direct extension of the process through the bone into the nerve. Practically all forms are exceedingly dangerous to vision. The optic nerve is a highly specialized and delicate tissue, and if the inflammation be not relieved quickly, tissue destruction going on to serious damage to vision, if not to actual blindness, is the result.

One special form of neuritis deserves particular mention—the so-called alcohol and tobacco amblyopia. This is really an inflammation of the papillo-macular bundle of the optic nerve, the most highly specialized part and therefore the most vulnerable. This was demonstrated by de Schweinitz from autopsy specimens some years ago. It usually occurs from alcohol and tobacco in combination, and seems to depend on digestive or fermentative disturbances caused by the ingestion of large quantities of both articles. There is an impression among the laity that if whiskey or other alcoholic drink that is free from impurities is taken, no bad effects are to be apprehended; but it is certain that the disease has been caused by absolutely pure products. Poisoning by methyl alcohol, etc., does not cause this type of disturbance. It can also occur with tobacco or alcohol alone. For some years it was

doubted that tobacco alone could cause a neuritis, but a number of cases have been reported where it seemed fairly certain that alcohol had not been taken. It usually occurs in cigarette smokers who inhale and who have a cigarette in the mouth during most of their working hours. The tobacco cases are less stubborn than the alcohol ones, but are sufficiently dangerous to vision and will go on to absolute blindness unless relieved. The attack is usually quite rapid in its onset. The patient wakes up in the morning with a dense whitish blur in the line of direct vision and a total loss of color perception when an object is looked at directly, though the outer parts of the field may still perceive some colors. Ophthalmoscopic examination shows only slight appearances of neuritis, or perhaps none at all at first. In other cases, the failure of vision may come on more slowly, but this is rather exceptional and depends on the ability of the patient to burn up the alcohol. Chronic habitual alcoholics are a little more apt to have a slow onset. The prognosis is relatively favorable, but of course all alcohol and tobacco must be withdrawn, and the intestinal tract must be energetically treated by diet, irrigations, cathartics, etc. Strychnine in doses up to the limit of toleration is also valuable. A rather curious impression has occasionally been brought forward: that those who have recovered from an attack are more or less immune. While it is certain that in some cases smoking and drinking have been resumed without damage to vision, it is most probable that they have been resumed in much smaller quantities; also there are plenty of instances where drinking has been resumed in large quantities and where the patient has gone blind through recurrent attacks. It is very doubtful if any real immunity exists, and in any event it seems wiser not to test this point.

Methyl alcohol has been mentioned. This, however, does not cause a definite neuritis, but quite a different process. The patient who has taken enough methyl alcohol becomes rapidly unconscious and the optic nerves become pale, with contracted vessels, and most commonly go on to total

atrophy and complete blindness. The same thing happens in poisoning from a large dose of quinine. What usually happens is that one or two teaspoonfuls is taken by mistake for a dose of salts. The patient becomes unconscious, and when he recovers the optic nerves are white, with small vessels and the patient is blind. He rarely recovers, though vigorous eliminative treatment, followed by full doses of strychnine are usually given. All sorts of attempts to secure dilation of the central vessels have been made, but they seem to have little effect.

Choked disc or papilledema is a process in the optic nerve that requires special mention. It is often confused with neuritis by the use of names like "papillitis," which should be applied only to a plastic or inflammatory process. Essentially, it is a choking of the lymphatics by some disturbance in the base of the brain near the ventricles, which dams up the fluid in the optic nerve and causes also a distention of the subdural and subarachnoid spaces in the sheath of the nerve just back of the eyeball. There are no plastic exudates and no depression of vision until the process has lasted for some weeks. It is invariably caused by increased intracranial pressure with obstruction to the basal lymph circulation. As increased intracranial pressure is almost always caused by a neoplasm, so it follows that choked disc usually means brain tumor with obstruction of the basal circulation. Thus a tumor of the cortex does not cause choked disc until the process extends so as to involve the base. The diagnosis with the ophthalmoscope is therefore very important. It is not difficult in the typical early cases; whereas later the picture may be very confusing. I was fortunate enough once to see a case the day before the onset of the edema when the nerve was normal, and the very day of the development of the edema—the day following, when the nerve looked as if a drop of water had been injected into it with a hypodermic needle. The next day it thickened and became slightly opaque; and soon it became swollen with tortuous and distended vessels. The vision did not decrease for a month, however. This case

was explored and found to have an inoperable glioma, as is too often the case. The diagnosis rests on the normal vision, markedly swollen nerve, with tortuous vessels and perhaps hemorrhages and the absence of plastic exudates in the early stages; whereas in neuritis the nerve is red and hazy, with less marked swelling, perhaps none at all and plastic exudates on its edge and extending over onto the retina. When a neuritis begins, the vision at once falls off rapidly, and if the neuritis be not checked a secondary atrophy of the optic nerve with greater or less damage to vision is the result. Choked disc cases often require a cranial decompression which relieves the optic nerves but has little effect on the underlying tumor.

All sorts of curious functional changes take place in the eye as the result of instability of the general nervous system. These changes vary from the simple muscular irritability of those who can never tolerate any change in coordination and who have muscular aches and even cramps whenever a change is made in their glasses, to the absolute cessation of function seen in an external muscular paralysis or even the condition known as hysterical blindness. Any of the external muscles may be affected, 3rd, 4th, 6th nerves, levator of the lid, or the pupil. A very suggestive condition is that the paralysis is incomplete and does not follow the complete distribution of the nerve. Scotomas or spots in the field of vision occur and are usually not in line with the normal distribution of the fiber bundles. For instance, the upper half of the retina may fail to function; whereas, without retinal disease failure of function due to a cerebral hemorrhage would be a lateral hemianopsia, or in accordance with the normal distribution of the fibers. In fact, inconsistency is one of the most striking signs of a hysterical disturbance. In an eye that is blind and cannot see light from hysteria, if the light be thrown on the pupil it will contract normally. Also, the signs of emotional instability are striking and suggestive. Many such cases who have a very patient, long-suffering aspect, will blaze out into fits of temper if irritated. The so-called globus hys-

tericus may also be found, and the patient will complain of a choking sensation in the throat on the least provocation. Also other hysterical manifestations may be present.

Hysterical cases always are influenced by methods of suggestion but the suggestion must have some basis of reason. In other words, it is not sufficient to tell a hysterically blind person that she can see, but some drops must be used, or glass used which is supposed to influence vision. While such cases may last indefinitely, they usually yield in a short time if the patient's confidence can be gained. Of course, a sharp look-out should always be kept for true organic conditions, for it is quite possible for a hysteric to have an organic lesion. It is bad enough to mistake a hysterical condition for an organic one, but far worse to mistake an organic lesion for hysteria.

SPECIFIC SENSITIVENESS AS A CAUSE OF SYMPTOMS IN DISEASE

(Essential Hematuria and Localized Retinal Edema as Possibly Allergic Symptoms.)

Arthur F. Coca

Delivered February 28, 1930, in the Friday Afternoon Lecture Series of The New York Academy of Medicine.

Since the day of Virchow the physician has arrived at the understanding of disease and the art of healing through the study of more and more of what, from the standpoint of medicine, are called the basic sciences—biology, botany, histology, histo-pathology, chemistry, physiology, pharmacology, bacteriology and finally immunology.

It is interesting and somewhat amusing to recall the opposition on the part of its immediate predecessor to each new science as it endeavored to win separate recognition in the medical field, both in the colleges and in extra-collegiate medical organizations.

There may be some still living who remember the reluctance with which the subject of pathology was relinquished to specialists by the medical internists. Many may still smile at the efforts of the pathologists to maintain their hold on bacteriology and bacteriologists.

And to-day the immunologist hardly knows whether he exists or not. Yet the subject of immunology, although based on the single phenomenon of the specificity of the antibodies has grown to such importance and dimensions and has so increased in complexity that it requires and deserves the full attention of anyone who would master it.

We are met here to discuss one category of a group of pathologic conditions which may well be referred to as immunologic diseases.

The course of the science of immunology has been surprising and indeed paradoxical. It began with observations upon immunity to infectious disease which were immediately applicable to the protection of man and the lower animals. It next discovered the antibodies which were protective (that is, antitoxins) and others (the agglutinins and precipitins) which were of great value in diagnosis but of no significance to immunity to infectious disease. Then came the astonishing paradox in the discovery by Landsteiner that antibodies are not only not always protective but are sometimes the actual cause of disease. Landsteiner demonstrated that the cause of paroxysmal hemoglobinuria is the presence of an antibody (an autohemolysin) in the blood of such subjects, which is capable of destroying the individual's own blood corpuscles if the surface blood becomes chilled to a certain critical low temperature. This was the first demonstration of an immunologic disease.

To-day I have to speak about the other category of immunologic diseases, some of which have been proved to be due to antibodies—the diseases of specific sensitiveness.

By way of introduction of this topic I should like to recall briefly the basic features of specific sensitiveness so far as our knowledge of the subject at present permits.

These are: first the specific mechanism and secondly the shock organ and shock tissue.

The specific mechanism of hypersensitiveness has been demonstrated in only two forms; that is, in anaphylaxis in the lower animals and in the atopic or inherited group, which includes hay fever, bronchial asthma and eczema. The specific mechanism of anaphylaxis is the anaphylactic antibody; that of atopy is the peculiar antibody known as the atopic reagin.

Among the more striking differences between these two antibodies is the fact that the anaphylactic antibodies can sensitize the unstriped muscle of lower animals but not

the human skin, whereas the atopic reagins can sensitize the human skin but not unstriped muscle.

The shock organ in anaphylaxis is different in different animal species but it is the same in every individual of the same species. The shock tissue of anaphylaxis in all lower animals is usually unstriped muscle. In the guinea pig it is the bronchial muscle, which contracts tetanically under the antibody-antigen reaction and thus causes death by respiratory asphyxia; in the rabbit it is the medial muscle of the pulmonary artery whose tetanic contraction under the influence of the antibody-antigen reaction causes death by circulatory asphyxia; and in the dog it is the medial muscle of the hepatic vein whose contraction causes a fall in the systemic blood pressure, which is made fatal by a coincident widening of the systemic capillary bed.

These differences in the site of the anaphylactic reaction in the different species are due to anatomical peculiarities. The unstriped muscle in the three sites mentioned above is equally susceptible in the guinea pig, rabbit and dog, to the antibody-antigen reaction; they all contract in those situations; but the bronchioles are not closed in anaphylactic shock in the rabbit and dog because the bronchial muscles in those animals are relatively too weak to constrict the heavier walls, and for a similar reason the pulmonary arterioles are not constricted in the guinea pig and dog, and the hepatic veins are not occluded in the guinea pig and rabbit.

Although unstriped muscle seems to be the only shock tissue involved in acute anaphylactic shock, there is probably another tissue in lower animals in which anaphylactic antibody-antigen reaction causes a physiological response.

This appears to be indicated by the fact that cutaneous injection of the antigen in the anaphylactic lower animal causes edema and sometimes necrosis—stages of inflammation which seem not to be due to any primary action on or by unstriped muscle. This type of lesion is not produced

when the antigen is injected otherwise than locally or if it is absorbed after ingestion or inhalation.

In the lower animal the shock tissues are normally susceptible to the irritating influence of an antibody-antigen reaction. This is proved by the passive sensitization experiment which is successful in 100 per cent of normal guinea pigs.

In the human being the shock tissue has not been definitely identified. However, it seems probable, that it is not unstriped muscle because that tissue in the guinea pig can not be sensitized with the atopic reagins.

The shock organs or sites in which the physiologic reactions of human hypersensitiveness may take place are numerous. Thus we recognize the conjunctiva, the nasal mucous membrane, the bronchial mucous membrane, the gastro-intestinal mucosa, the skin and the subcutaneous tissues. Undoubtedly there are other sites and these possibilities will be discussed presently.

With the remarkable exception of the skin, the human shock-organs that are subject to the inherited category of hypersensitiveness are not susceptible in the normal person to the reagin-antigen reaction. This is shown in the fact that in many persons, in whom reagins have been demonstrated in ample quantity, contact with the respective antigen, either natural or by injection (Walzer and Brunner) has not been followed by any reaction on the part of the atopic shock organs; and this evidence is supported by the common observation that, whereas two persons may be sensitive to the same substance (for example, a pollen) and both carry the same reagin in their blood, one of these may suffer only symptoms of hay fever, and the other only those of asthma.

Thus it is clear that the shock organs of atopy are in an abnormally sensitive or atopic state, which is subject to the atopic hereditary influence. Moreover, there is evidence of a separate hereditary influence upon the shock organs

in the fact that the hypersensitiveness of hay fever tends to be transmitted as such to the affected child rather than as asthma, and vice versa.

The characteristic primary lesion of atopy is congestion with edema; this is seen by direct examination in hay fever, in urticaria and angioneurotic edema, and in bronchial asthma; and one may surmise that the same lesions are present in gastro-intestinal idiosyncrasy.

The question naturally arises: how does the antibody antigen reaction in specific sensitiveness irritate or injure the shock tissue? Most of the study which has been given to this question has been directed toward the finding of a hypothetical poison (protein poison, anaphylatoxin) which could be identified as the ultimate injurious agent; and most investigators of the question have sought the poison in a split product of the antigen. However, this idea has met with two difficulties: first, that the minimal lethal quantity of the usual antigens contains but a small fraction of the lethal quantity of its most poisonous derivative, histamin, and secondly, that an incubation period, which must be required for the splitting process, is missing.

The well-known recent researches of Lewis and his coworkers, and of Dale, have given support to the idea that the antibody-antigen reaction liberates the loosely combined histamin, which Dale could demonstrate in normal tissues, and that this histamin is the ultimate poison of specific sensitiveness.

There are some facts which offer serious objection to the universal application of this theory in all the phenomena of specific sensitiveness. One of these is the difference in the character of the different cutaneous lesions of hypersensitiveness; another is the specificity of the protection induced in hay fever by the injection of pollen extracts. Neither of these two considerations is, on its face, in harmony with the histamin theory of Lewis and Dale, because the former makes necessary an additional assumption that histamin is capable of causing different lesions in the same

tissue, while the latter proves that the tolerance developed under the specific treatment for hay fever is not induced against the non-specific effect of histamin.

Let us now return to the stated subject of this lecture, which is Hypersensitiveness as a cause of symptoms of disease.

From what has been already said it is seen that a discussion of this subject must resolve itself into a consideration of all the possible sites that may be injuriously affected because of the state of hypersensitiveness. Some of these have been mentioned:

The *conjunctiva* is sometimes, though not always, affected in hay fever. It is a remarkable fact that even when, under the influence of specific treatment for hay fever, the conjunctiva is no longer affected by the normal contact with the pollen during the hay fever season, it may exhibit the same degree of sensitiveness to the pollen extract by test as it did previous to the treatment.

The *nasal mucous membrane* is the chief "shock organ" of hay fever; the symptoms of this condition are too familiar to need mention. They may be caused by many other excitants beside the pollens though by far less frequently.

The *bronchial mucous membrane* is the shock organ in asthma. Direct examination of the mucous membrane in this condition has revealed edema without constriction. The sudden attacks of severe dyspnea have been ascribed to spasm of the bronchial musculature. This explanation is contradicted by the inability of the reagins of asthma to sensitize unstriped muscle in the lower animal.

Huber and Koessler report that the bronchial muscles are hypertrophied in the asthmatic lung and they conclude from this finding that the asthmatic attack is due to bronchospasm. Aside from the question whether bronchospasm occurs in asthma it would seem desirable to control the finding of Huber and Koessler by similar examination of

the bronchial musculature in other chronic pulmonary disease, especially chronic bronchitis and tuberculosis without asthma.

The *skin* is the exclusive shock organ in two different forms of specific sensitiveness: in atopic eczema and in specific dermatitis (dermatitis venenata) and it takes part in the hypersensitiveness of infection of the tuberculin type and also in atopy, in serum disease and in food and drug idiosyncrasies, in the development of urticaria and other eruptions. The pathology of these various reactions is different, but the cause of these differences has not been studied.

Certain *gastro-intestinal* symptoms of specific sensitiveness are well recognized; those of nausea, vomiting, gastric and intestinal pain and diarrhea. The underlying pathology of these symptoms has not been studied because they so seldom result fatally.

The *sub-cutaneous* and *sub-mucous* tissues participate in serum disease and in food and drug idiosyncrasy. The localization of these lesions which is seen in serum disease and in some instances of angioneurotic edema has as yet no explanation.

There are a few other symptoms, some less common, for which there is acceptable evidence of a hypersensitive nature.

W. W. Duke has reported a case in which *bladder pain* was caused by the ingestion of tomato or the subcutaneous injection of an extract of tomato.

W. L. Beecher reports three instances of canker sores in the mouth which were caused by cocoa, in one case, wheat in the second and cocoa, wheat and cabbage in the third. The lesions could be elicited at will by the ingestion of the respective foods.

Matthew Walzer allows me to mention an unpublished instance observed by him of canker sores caused by the oil of cinnamon contained in the mouth-wash Lavoris.

Baagoe reports a case of recurrent herpes of the face caused by eating crab meat.

To W. T. Vaughan is due the credit for the demonstration of the allergic nature of migraine. As Vaughan remarks, the idea has been entertained before, but only as a theoretical basis for the application of those non-specific therapeutic measures which had been used with some success in the recognized forms of human hypersensitiveness —asthma, urticaria, angioneurotic edema, eczema, hay fever (Auld, Storm van Leeuwen, Widal, Radot).

Vaughan, in 1927, reported 10 cases of migraine (out of a series of 33) in which specific sensitiveness to various foods could be shown and which were "cured" by mere avoidance of those foods. Attacks of migraine could be precipitated by the accidental or experimental ingestion of the respective materials. Vaughan describes a delayed cutaneous reaction occurring six hours after the skin test had been made; he attaches a special diagnostic significance to such reactions in migraine.

Corresponding with the large proportion of failures in the specific treatment of asthma, the avoidance of the foods causing skin reactions in the subjects of migraine failed to relieve ten of the 33 cases observed by Vaughan.

In the following year Berg reported an instance of migraine which he proved to be due to the inhalation of the vapor of coal tar.

The pathology of migraine is not known because death does not occur during an attack; however, the lesion may be assumed to be intracranial and may be found to be a localized edema affecting the meninges.

All of the shock organs and tissues and allergic symptoms that have just been mentioned have been identified as such by one or more of the following criteria:

(1) By eliciting characteristic symptoms or lesions upon applying the excitant directly to the part.

(2) By observing the constant appearance of the characteristic symptoms or lesions after normal contact with the excitant (as by ingestion or inhalation of it).

(3) By the appearance of characteristic symptoms or lesions following the injection of the excitant.

(4) By the disappearance of the symptoms or lesions upon the avoidance of the excitant.

The evidence under the first three criteria has, of course, been controlled by negative results of the same tests in normal persons.

Now although all of the organs mentioned have been identified as shock organs of specific sensitiveness, there are many instances of clinically typical hypersensitiveness involving one or more of these sites for which no specific excitant can be found. Furthermore, it is well known that the shock organs in sensitive individuals are often susceptible to non-specific influences. This fact is perhaps most clearly apparent in the non-specific reactivity of the skin in many atopic persons to intracutaneous injections.

These circumstances can hinder the effort to prove the hypersensitive nature of the less common symptoms of hypersensitiveness by making impossible the application of the three criteria for their recognition, which have just been mentioned. One cannot experimentally induce the symptoms of specific sensitiveness unless one knows the specific excitant of them.

However, there is indirect evidence of three kinds which sometimes supports a presumption of the hypersensitive nature of otherwise obscure lesions or symptoms. One of these is a personal or immediate family history of recognized idiosyncrasy; the second is the seasonal appearance and disappearance of the lesion; and the third is the disappearance of the lesion during a period of the affected person's absence from the customary environment.

It is clear that such evidence cannot be accepted as con-

clusive on the basis of one or two cases; but, as the number of similar cases increases, the accumulated evidence from them, if consistent, will be viewed with greater confidence.

With these reservations in mind, I may describe a case that exhibits two symptoms which I believe have not been considered heretofore as phenomena of hypersensitiveness, and which occurred, in this instance, in circumstances that suggest such an interpretation. The symptoms were those of so-called idiopathic or essential hematuria and localized edema of the retina.

The case history follows:

Family History:

Epilepsy, hives, migraine on mother's side; no asthma, hay fever nor eczema on either side.

Personal History:

Hives at 12 years; indigestion from 17th year greatly improved after gastro-enterostomy and one year in a tropical country, but recurring soon after return to the United States, and then practically cured by avoidance of certain foods—especially lemon, corn starch, gelatin (commercial), strawberries, eastern peaches. One tea-spoon full of fresh strawberry juice causes "heart burn" within two to three hours. Lemon rind (two tests) causes acute gastritis (severe pain without nausea, fever, headache—different from migraine) lasting three days. Limes, oranges, fresh or in marmalade, grape fruit cause no symptoms.

Migraine beginning at the age of 27, the attacks increasing in frequency and severity till middle life, and rapidly lessening after the age of 45. No attacks during ten months in the Philippines at the age of 34.

In the early summer of 1922 a sudden clouding of vision of the left eye appeared which completely disappeared in the late fall and reappeared in the following spring. The ophthalmologist found an edematous area in the left macula as the sole lesion. During the next winter the spot cleared completely, to recur in the spring. In July, that year, a trip was taken to Panama. One week out of New York the vision in the left eye had cleared completely and remained so till about 10 days after the return to New York, when the cloud began to be noticed again. This lesion still persists and while it is not so intense in the summer as at first it does not entirely disappear during the winter.

On March 18th, 1924, there was a sudden hematuria without pain. The urologist found the bleeding to be from the right kidney. The function of both kidneys was normal; urine cultures were sterile; pyelograms of

both kidneys revealed only a constriction in the upper portion of the right ureter. This was widely dilated during the next few months. The later pyelograms showed no abnormality. On May 3rd, 1926, hematuria recurred but with less blood than at the previous occasion. Again no pain. Sodium bicarbonate was taken at frequent intervals during the next day and by the third day the bleeding had stopped. There was no examination at this time or later. The scotoma in the left eye was noticed on this day for the first time that year.

In the fall of the same year there was a severe attack of urticaria lasting several days.

On April 23rd, 1928, a tarry stool was passed and blood pigment was demonstrated in it. There had been no gastric or abdominal pain nor other abnormal symptoms. The hemorrhage did not recur. Fluoroscopic examination immediately after the hemorrhage and a complete examination at the Mayo Clinic in the following November revealed no organic lesion.

The general health of this subject has visibly improved during the subsequent two years. Weight increased from 147 pounds to 163 pounds.

I have learned of another instance of essential hematuria occuring under circumstances similar in important respects to those of the case just described.

Family History:

The antecedents on both sides are long lived and healthy; asthma and hay fever absent on both sides. Mother has suffered long from eczema, and has frequent attacks of urticaria; is subject to chronic arthritis.

Personal History:

Subject to eczema on hands and feet which breaks out each year in June and tends to heal during the winter. Formerly had "cold sores" on the lips every summer. Exhibits a sensitiveness to sunlight in the formation of bullae, limited to the nose 48 hours after exposure to direct sunlight in the summer time.

In June, 1900, blood appeared in the urine and persisted till November. There were no other symptoms. In June, 1901, hematuria recurred lasting a few weeks. A third short attack occurred about 12 years later also in early summer. In the fall of 1924, the usual typhoid vaccine injections were taken and the third dose caused a severe local and general reaction. At the same time hematuria recurred lasting a short time.

The facts in these two cases do not prove the hypersensitive nature of essential hematuria and of localized edema of the retina; nevertheless they constitute a reasonable

ground for considering both of these conditions as possibly allergic.

There is a long list of other conditions that have been thought to be expressions of a hypersensitive state but the evidence in these instances is not convincing.

Another important condition has been considered from the point of view of hypersensitiveness but the published opinions are heavily against that interpretation; I mean the condition known as epilepsy. The reasons for this adverse opinion are perhaps: 1. because epilepsy is known to be caused in some instances by pressure of bone upon the brain, 2. because epileptiform seizures are known to affect lower animals.

Nevertheless, there are two considerations which speak for the allergic nature of epilepsy; one is the fact, well known since Hippocrates first noted it, that the characteristic meningeal lesion of that condition is also a characteristic lesion of allergy, namely, edema, and the other is the observed hereditary association of epilepsy with migraine.

Redlich has reported a case of migraine in which the attack sometimes developed typical epileptic characters (unconsciousness, convulsive movements, bloody foam in the mouth).

In conclusion I would recall that many of the important human organs have been identified as shock organs of hypersensitiveness. In fact every medical specialty is obliged now to take cognizance of the lesions of hypersensitiveness that come within its province and must therefore, become familiar with the immunologic principles concerned in the etiology of those lesions in order to understand them and to treat them rationally.

DRUG ADDICTION

ALEXANDER LAMBERT

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If one considers the subject of drug addiction from a broad medical point of view, it will be readily seen that confining the condition to the use of the opium derivatives is altogether too narrow a conception to be of any real medical value.

Drug addiction is best defined as the habitual use of any drug taken for the purpose of avoiding the emotional strains of life. It is the habitual use of a drug, to obtain a balance in the personality whenever it seems impossible to adjust the problems of existence without temporary relief.

Trotter expresses it extremely well when he says that the intoxication and narcotic impulses have been almost universally regarded on the one hand as a sin or a vice, on the other as a disease, but there can be little doubt it is essentially a response to a psychologic necessity. In the tragic conflict between what man has been taught to desire, and what he has been allowed to get in life, man has found in alcohol, as he has found in certain other drugs, a sinister, but effective peace maker.

Probably the mildest form of drug addiction is shown in the habit of taking hypnotics; here it is, that the worries of life, the unsolved problems which prevent sleep, are the expression in the mildest form of the wear and tear of life, which with its worries, prevent rest and recuperation which we expect each day to obtain, when the day's work is done. The average person can face life fairly well, provided that he may obtain a night's sleep, and temporary relief by forgetfulness. With the daylight his courage returns, and many hundred years ago, the psalmist realized it, when he said, "Help cometh with the morning," and knew that daylight would bring a change of subject in his mind when the day's work began.

Probably chloral hydrate is the oldest hypnotic used for this purpose, which has had a wide use, and carried with it its habit forming peculiarities. It is a very satisfactory drug to produce natural sleep, from which the patient wakes naturally, and easily drops to sleep again, without the annoying period of lying awake, and in the morning feels relaxed and refreshed. One or two generations ago it was a drug which had many devotees in chronic habit form, and was a habit which was difficult to break, because at that time the profession did not understand the psychologic basis on which the habit was formed.

It causes a reduction of blood pressure, it produces a very comfortable sleep, but in elderly people it has the curious property of causing sleep walking, during which the patients are able to awake partially, but do not separate their sleeping from their waking consciousness, and they are apt to act in an automatic manner, get up, and move about their rooms, or run up and down the hall half awake, and half asleep, apparently acting out their dreams in a very disturbing manner, disturbing, however, more to their family, and their attendants than to themselves, for frequently the following morning they have absolutely no recollection of the trouble they have made, and insist that they have had a comfortable night. Its action on a heart already diseased however, is not without danger, and therefore it may be treacherous, often when its benefits are needed the most.

It has been most frequently used combined with the bromides, but now that we can more accurately gauge the psychic differences in the average normal of the patient, we can readily see that chloral alone, or with bromides, and sometimes bromides alone, if continued any length of time, produce a deterioration in the normal judgment of the patient, and even delusions, which makes them inaccurate in their statements and ideas, and if persisted in, may go on to a distinct drug psychosis.

The next group of drugs used as hypnotics was the trianol and sulphonal group. The danger to those who indulged

in these, was a muscular incoördination on the day following, and if persisted in, there was a distinct deterioration tending towards the dementia type.

The most common hypnotic to-day is the barbituric acid group; it began with veronal; it has run through a large number of hypnotics, each chemist endeavoring to make a substitution in the chemical constitution that would leave its hypnotic powers intact, but cut out the very evident evils of perversion of personality, which these drugs show.

Veronal in many instances is an evil drug, and drug psychoses with hallucinations, delusions of persecution. and an ugly resentful distortion of personality, are common after its excessive use. In the mildest intoxications it leaves patients ill natured, sharp tongued, suspicious, and mean tempered, giving them a reputation for meanness of disposition which seems so natural that people do not recognize that it is the poisoning from a drug, and the personality of the unfortunate patient is blamed for the perversion. Veronal is not infrequently used with suicidal intent, and large doses of it produce coma lasting many days, from which it is difficult to arouse the patient, and when a psychosis is thoroughly established, it takes weeks, if not months to bring about a recovery under the best conditions of institutional care.

The different forms of this group, such as the dial ciba, allonal, medinal or sodium veronal, the barbital, etc., all have their advocates and in carefully adjusted doses, under usual circumstances, when taken for temporary emergencies, they do not produce a harmful reaction, or if an individual is sensitive to it, the symptoms produced soon subside. It is the wide spread unrestrained use that is harmful to the community, and the unrecognized necessity of this form of drug addiction is the expression of the psychologic maladjustment of the wear and tear of life, produced by the worries and unsolved problems that force patients to turn to these addictions.

This does not seem to be generally recognized by the medical profession, and many chronic drug intoxications are not recognized. The treatment of this problem lies in the emotional training of the patient, not that all worries and problems of life can be solved by the physician, but the solution lies in forcing individuals to solve their problems, and realize that the solution is obtained only by facing it, and not by dodging it. Not that all marital misfits can be solved, even by the facing of the fact, nor that all petty annoying self centered selfishness can equally be re-arranged, but the fact that the situation is faced, and that the incessant use of hypnotics is used to dodge all this maladjustment is realized means that many patients that now go untreated, and become poisoned, would be relieved of their worries and their drug addictions.

The problems which seemingly defy solution, are met with in the narcotic addictions to alcohol and opium; both these drugs are narcotics, and are used for their narcotic value, and the fundamental basis of alcoholic drunkeness and morphine addiction, is essentially the same. The alcoholic who periodically drinks to forgetfulness, does it on the same psychologic basis that the morphinist does who takes his drug habitually, to dodge the bitter disappointments and unhappiness of life, or the responsibilities which they are unwilling to face. It is not a question of will, it is a question of emotions, and when the emotions in the personality are too bitter, and too intense to be harbored, temporary relief, or permanent relief is sought in alcohol, or permanent relief is obtained in morphine to balance a maladjustment which cannot otherwise be borne.

Alcohol produces in itself, when taken to excess, changes in the essential parenchymatous cells of certain viscera, and in the destruction of these, there is left behind a connective tissue replacement. It therefore leaves a permanent injury behind its excessive use.

Morphine, on the other hand, though indulged in for years, is a functional cellular poisoning, and leaves no recognizable pathologic injury, and when taken away, and

the nervous tissues which were poisoned are given time to recover, they come back to the condition in which they were before the poisoning began.

A morphinist, therefore, after many years of poisoning, can return to his average normal, but an alcoholic having suffered the morbid processes of a Korsakoff syndrome is left with a personality, the finer emotions and values of which are hopelessly burned out, and that personality never regains its former charm, and previous sense of values.

The habit indulgence in these two drugs has been almost universally looked upon as moral degradation, but curiously enough in those countries in which the indulgence in one is more or less condoned, the other is condemned, while in other countries the reverse is true. That is, in the Western nations, and in Japan, alcoholic indulgence is condoned, morphine addiction is condemned; in China, India and the East opium is condoned, and alcoholic indulgence is condemned. The morals therefore, however strictly enforced in any one country, vary in others regarding these narcotics; it is therefore custom and convention which control, and each country condones the use of some narcotic to unhappy humanity, but sternly regulates which one shall be chosen.

The use of both these narcotics has come down to us from ancient, probably prehistoric times, and both have been used for centuries in medicine, opium coming to us from that brilliant Arabian culture of the middle ages.

Alcohol is used the more often of the two to cut off emotional inhibitions, and the feeling of restraint which prevents freedom of speech and action, which otherwise the normal self control would restrain, or custom and convention inhibit. This is seen by its universal use in youth to cut off inhibition, that their emotional life may be enjoyed and lived more fully. Youth learns readily that in alcohol there is an easily accessible substance that quickly removes the sense of responsibility, and quickly gives relief from restraint, and the wear and tear of life. Later

when the worries and struggle of life bear too heavily on them, and the personality, as middle age is reached, can not carry the strain of existence, alcohol is known to be the quickest acting narcotic, producing a temporary relief in consciousness, and its excessive use will probably be condoned. Age, however, uses it to forget, and obliterate the failure of one's hopes, and the defeat of one's cherished plans, and the memory of the overcrowding bitterness of life.

Morphine, on the other hand, is used by those who begin life with inadequate personalities; those whose environment has forced on them a bitter realization of poverty and lack of opportunity, and in whom the struggle for existence seems in the very beginning a hopeless fight against forces too great to be overcome. It forms in that type of inadequate personality in their youth, a balance that enables them to muddle along in an existence, the bitter edge of which is blunted.

In many of the morphine addicts to-day, this evidence of inadequacy of personality is the striking feature that crops out in any endeavor that is made to help them. The majority of them show that tendency towards dementia precox which brings with it the peculiarity that they never can get in touch with existence in such a way that their problems can be solved. Not that they are insane, but their intelligence however keen, does not control their actions. Although they may be sufficiently intelligent to succeed in life, their actions spring from uncontrolled emotional stimulation, and when their minds are filled with antisocial resentment, they fall easy victims to the chronic indulgence of the opium group. The solution of their problems at times appears fairly hopeless, because they fundamentally have no desire to reconstruct themselves, and there is no coöperation on their part for such reconstruction.

Morphine addiction is often acquired in the justifiable struggle to obliterate physical pain; many of these patients acquired it through legitimate use, under legitimate med-

ical prescription against sickness, and physical suffering. Public opinion in this country unhappily does not make any difference in the condemnation of these unfortunates, but classifies them all in the psychopathic class of those who are unwilling to face existence. In the care of these, as we shall see, there is a vast difference in the prognostic outlook for the successful elimination of their habit. This class wants to be free, and if given the opportunity remains free. It is the unhappy psychopathic group with maladjustment of their existence, and malformation of their personality, which are the difficult ones to help.

Considering the alcoholics as narcotic drug takers, for such they are, they show distinctly two types of alcoholic excess.

Youth, in the vast majority of instances, as we have said, drinks to enjoy life more abundantly; uncertain of themselves; ignorant of racial experience, and lacking in the experience of life, vigorously resenting all authorative restraint, alcohol is used by them to inhibit all such restraints, to blot out all realization that they do not know, and they are determined to experience for themselves the full emotional rush of life, without intellectual inhibition, believing that they can answer their questions and solve their problems more fully by so doing.

In youth imagination and emotions enormously predominate over intellectual processes, and over the controlling influence of judgment, for judgment, the most valuable of mental attributes develops the most slowly.

Habitual drunkeness is under these circumstances not the thing desired, it occurs because youth is determined to take enough alcohol to obtain the fullest results. In the majority of instances experience soon teaches that this form of alcoholism is not the answer to life, nor the solution of its problems, and with its lack of value as such, it is, in the majority of cases, discarded.

To those, however, who cannot, or who have not been taught to, adjust their emotional balance to their environment, alcohol is an easy method of balancing a mental

deficit. It cuts off the sense of inferiority, it blunts a sense of failure, it possesses above all drugs that sense of what London called "White magic," that when under its influence, whatever we did or said, no matter how inaccurate the fact, it all seemed to be the most perfectly done, and the most brilliantly said.

Alcohol's earliest toxic effect is shown in its atrophy of judgment, and its hypertrophy of self conceit. Many individuals cannot believe how sensitive they are to small doses of alcohol; a single cocktail taken on an empty stomach shows within a short time its toxic effect, there is the mental inhibition, or there is the evidence that that personality is saying things it would have left unsaid, or doing things it would have left undone without the alcohol, and when that occurs, moderation has been exceeded, and that personality has taken an excess of alcohol, which if continued, is sure to bring harm, or injury to the mental and physical makeup of the individual.

Individuals sensitive to alcohol drift unconsciously into its habitual excess and soon if a single drink is taken, they go on to a sure excess which may end in several days' debauch. The social customs of our race have from time immemorial, interwoven with good fellowship, and not a few unconsciously drift into an excess that has an unconscious, and not a vicious origin.

By the time a man reaches the early thirties, he knows whether he can see his opportunities opening before him, whereby a determined struggle will bring him success. The determined struggles requiring hard work, application and self restraint, cannot be won with an alcoholic handicap added to them. In this period the greatest number of young men give up their alcohol, if they have been drinking to excess, but if they go on, they get into the pathologic point of view in which like older men, they drink to forget.

The older group of alcoholics, those who have been through life, and felt its failures, have been through un-

happiness and felt its burning sting, or those who having tried, and through some uncontrolled factors have failed, find in alcohol its full narcotic value, and they learn to use it for its pure narcotism. These men do not get drunk because they drink, they drink that they may obliterate consciousness, and its unhappiness, and as they return to consciousness, drink again that they may not come into the suffering of conscious existence. Alcohol has from time immemorial been life's last remaining solace to those who go down in defeat.

In treating these patients, it is useless to argue with a mind that is poisoned by alcohol, it is waste of time to try to rearrange and appeal to a befuddled intellect, hoping to rearrange the balance of the emotional control. The first thing to do with an alcoholic is to put him to sleep, and see that he sleeps quietly long enough to unpoison his nervous tissues, and free his body from his narcotic. As soon as possible a vigorous mercurial purge aids enormously towards this result. Ordinary hypnotics in ordinary doses are insufficient to deal with patients already poisoned by alcohol.

One of the best drugs is paraldehyd, disagreeable as it is with its repulsive odor on the breath in the days following; 2 drams and repeat in a half hour, if the patient is not asleep, is the moderate dose for the average patient. This drug had better be given with orange juice and a little whiskey, which takes the repulsive taste away from it, or it can be given simply with the orange juice; but if none is at hand, then it is best given in ice cold water, and this drug has the advantage of acting quickly.

Another excellent remedy is a combination of chloral, codein and hyoscyamus; 25 to 30 grains of chloral, one or two grains of codein, and 30 minims of tincture of hyoscyamus at a dose, is an excellent hypnotic; with this however, should always be mixed in prescribing it to an alcoholic, the tincture of capsicum, tincture of ginger, or some such stomachic, that will stimulate the stomach to absorb. The alcoholic gastritis is notorious for its inability to ab-

sorb medication, and the gastric mucous membrane should be invariably stimulated by some such drug as capsicum or ginger.

If we use the amount necessary to put the alcoholic patient asleep of the barbituric group of hypnotics, in my experience, when the patients wake up, they are resistant and antagonistic to any suggestion, and are not amenable to treatment. It makes them non-coöperative, and an alcoholic, feeling sick and unhappy, in an ugly resistant mood, is a disagreeable patient to have anything to do with, and there is no use adding to the difficulties of the situation by increasing the perversity of humanity. These unhappy souls are only too eager to grasp at any excuse by which they can dodge the responsibility of freeing themselves from their narcotic, and the barbituric acid group of narcotics adds to the normal obstinacy and resistance of these patients.

As to the amount of whiskey, or alcohol to be given to an alcoholic coming out of his debauch; as a general rule the quicker they are cut off, the quicker they recover, but that is a rule, and not a law. It is easier to win their confidence by tapering them off, than by cutting them off. Older men should be tapered off, but the younger the man, the more abrupt should be the tapering process.

The alleged thirst for alcohol is only exhibited in the first twelve hours after their debauch, as they are recovering. If a patient has obtained the temporary relief he sought, and is disgusted with himself, and his intelligence is beginning to control him, he is often anxious to be rid of his alcohol, and is anxious to be helped to cut it off quickly and abruptly, but most of humanity cling to their narcotic as long as they are allowed to.

Nearly all periodic drinkers, and especially women, drink from the pathologic point of view, there is something in consciousness that they will not face, and cannot face its bitterness. In youth it is the disappointed affections, and the bitter tragedies of personal friendships. As

men grow older, it is their failures in the economic side of life, it is their inability to get along and succeed, or disappointed ambitions which crowd to the fore. Of course all through life it is the maladjustment of hidden harm and hidden distortions which have to be sought for, and have to be worked out, but it is invariably a psychologic readjustment that has to be made. The more positive and conceited that a patient shows himself, the more surely may one be convinced that one is dealing with a defence reaction, that is hiding the real reason, which the patient is unwilling to bring out, and face.

Most of humanity are concrete thinkers, unable to abstract their thoughts, unable to appreciate that it is the emotional impulse in life which is the mainspring prompting their actions, whether it be to drink, or to perform any other act, and that they can be just as willful and just as strong willed to get and take their narcotic, as to do any other act in life. This they do not wish to realize, but think that there must be some excuse, some reason which will relieve them of the responsibility of their acts. They therefore turn towards concrete ideas, and believe that there must be some drug, there must be some method of treatment, there must be some substance, that if handed to them, will prevent their drinking. Their relatives and friends beg you to give them something secret in their tea, that unknown to the patient will prevent his going out, and raising a glass of whiskey to his lips. They look for a concrete medicine that will act as a chaperone physically to stop them from doing a specific act.

All alcoholics are the most suggestible of human beings, and very often an impression can be best made upon them enabling them to regain their self-confidence, and to regain their willingness to try for a reconstruction, by giving them some definite routine concrete line of treatment that appeals to this universal suggestibility. On this basis have grown up a large number of definite concrete so-called "cures." They are useful through this appeal to suggestibility, but used alone, they fail. Often they are of

great use if combined with a psychologic rearrangement of the patient.

It is not necessary at this time to go into all the innumerable psychologic details of each type of personality, and its varying conflicts. To treat these patients successfully requires unending patience, and a cheerful charity regarding human frailties.

There is one peculiarity possessed by these patients that should never be forgotten; they never try to do any better than they think that the physician who is caring for them expects them to do, they are always looking for an excuse not to try. It is in these patients that the human mind best shows its unlimited power of self deception.

Considering next the morphine addicts, it is in this form of drug addiction in which the idea that there is a definite addiction disease has taken the firmest hold. This is based on the theory that an infectious disease produces a definite immunity against continued minute doses, or that one attack protects against another, and that it must develop some antibody in the human organism. It has been held that the morphine taken produces some resisting antibody, and that there is a definite distinct entity of so-called addiction disease following its use. This could never be proven, but it made a very attractive theory, and a very attractive picture to justify the taking of the drug.

Recently the work of Light and Torrence in Philadelphia has finally answered the question of the existence of such a disease. These investigators have carefully tested out in completely controlled conditions the physiological processes of the human body in addicts, and have compared them with the normal averages of the non addicted. They have found that persons addicted to morphine do not differ in their physiological processes from average normal non addicted persons. The result of their researches has resulted in a negation, no evidence of an addiction disease can be found. This work is of the greatest value, as it places on a scientific basis the fact that

the taking of morphine does not produce physical disease, nor does it produce morbid processes which show that the normal functions of the body are distorted by the morphine beyond what may occur in normal non addicted people.

At the same time there were in these same addicts no physical neurological changes found. This forces the whole question into the realm of changes of personality, which places these classes of patients definitely in the psychiatric side of medicine. We are accustomed to the average person which we designate as normal, but this normal is not a thin line, but should be considered on a broad plain as human normal beings vary widely, but are still normal. We recognize that individuals differ in their intelligence, and in the brilliancy and dullness thereof. We recognize that individuals vary in their emotional susceptibility, and in the intensity in which they react through these various emotions. We realize that men differ enormously in the intellectual control of their emotions, and in the intellectual control of their actions building up thus the picture of character.

The various distortions of the human mind are recognized under the broad category of the various forms of insanity, but between the normal of the average individual, and the distinct insanity as recognized medically and legally, there are many inadequate psychopathic personalities, not so much inadequate in the stupidity of their intelligence, as inadequate in their balance between intelligence and control of their actions in life, the intellect, however clever, does not control their actions; their actions appear as illogical sequences to their intelligence. They are not legally insane, but they show many of the same mental anomalies as the insane, differing only in degree. It is this class of humanity that cannot bear the stress of life, they have not the resistance to go on against the wear and tear of life, they have not the ability to conform to the usual conventions of society, and because public opinion criticizes, and resents their actions, they in return develop antisocial resentful ideas. It is among this type of men-

tality that so many of the morphine addicts develop; morphine blunts the sense of responsibility, it blunts the necessity of conforming to anything except a self willed selfish contentment.

In the recent work of the Mayor's Committee on Narcotic Addiction of New York City, 87 per cent of the 318 addicts were of this inadequate personality type, and 42 per cent were of the mental type that tend toward an early dementia precox; there were few that tended toward the manic depressive group. As is well known, this dementia group show the hypersensitive shut in type of individuals that are exceedingly self centered, and are easily hurt, and are resentful, but cannot arrange their personalities to harmonize with their environment. The manic depressive group, on the other hand, are more in touch with their existence, but they are unbalanced, varying between an excessive elation, and an excessive depression.

It was noticeable that only about 13 per cent of the group of addicts studied under this committee really conformed to average stabilized personalities. It is thus very evident that this psychopathic class of addict is vastly different from the persons of average stabilized personalities, who become injured or afflicted with painful diseases, and acquire the habit of morphine taking in an endeavor to be free from physical pain. It is worthy of repeated emphasis to state that this latter class are usually classed with the psychopaths, and condemned by public opinion equally with those who take morphine to balance their personalities. But if once rid of their morphine, as we have said before, in the majority of instances this average stable personality when once off the drug will not return to it.

It has been simply the fear of the suffering, and the inability to be rid of their morphine without intense physical distress that has made them go on, hating it, and hating the odium connected with it.

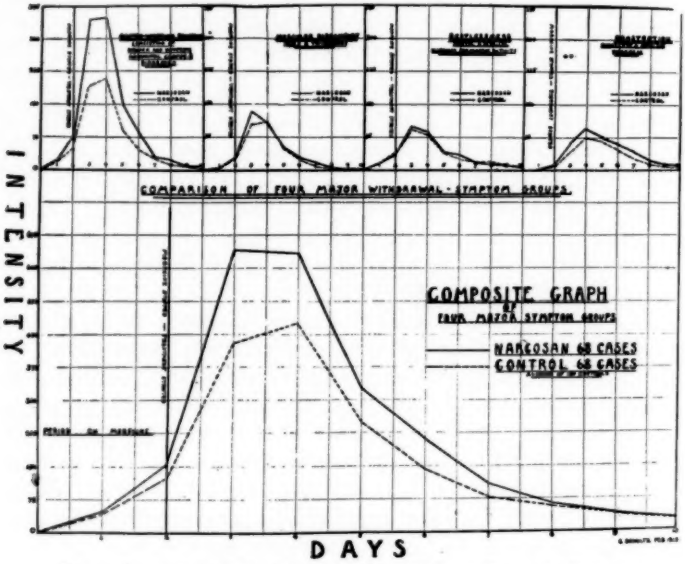
The work of Torrence and Light in Philadelphia under the New York Committee for the Study of Drug Addic-

tion had cleared up so completely the physical reactions of morphine in the body, that the Mayor's Committee on Narcotic Addiction concluded that it was their duty to study the various drugs that were used in the treatment of drug addiction. For that reason, the work that had been done in the Penitentiary on Welfare Island was continued, using a substance that was at that time believed to be of great value in the treatment of morphinism, that is Narcosan, and Narcosan was further studied under the strictest controlled conditions.

Hyoscine and atropin were also tested in a similar manner, and then the reduction treatment of morphine was taken up, in which no drug treatment was used, but the morphine gradually, but surely reduced. A short experimentation followed with the use of codein to relieve the symptoms of withdrawal of morphine. All these separate tests required time in a small ward, with but few patients at any one time. But with the strict control accurate estimates were obtained. The lantern slides here exhibited will show you the curve of each drug compared with an equal number of controls during the withdrawal period of morphine. The controls received no narcotic, unless their condition became such that they were in danger of severe collapse. They were given hypodermics containing Bismarck brown and glycerine in sterile water, and were given it as regularly as the patients receiving the various medications. The symptoms were divided in four classes; first the gastro-intestinal group, with nausea, vomiting, abdominal cramps and diarrhea; the muscular discomfort with aches and twitching was the second group; the third group was the restlessness, mental and physical, and increased psychomotor activity; the fourth group of symptoms were prostration, subjective and objective weakness.

There were 100 patients used for controls; the record of their symptoms gives us a curve which can be used as a standard, and any treatment used during the withdrawal of morphine can be compared in future with this curve to judge the efficacy of its action.

The accuracy of the observations was carefully checked up by one man judging the symptoms, and another man deciding on which patient should be a control, or obtain the treatment under observation, and the nurses in charge not knowing what was being given, or to which patient the control medication, or the actual medication was being administered.

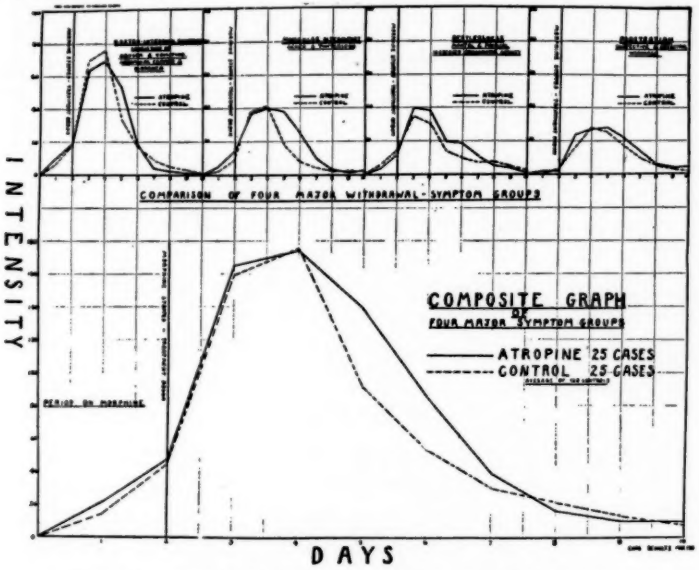


From the report of the Mayor's Committee on Drug Addiction
New York City, 1929

Beginning with Narcosan as a treatment, the results show that the gastro-intestinal symptoms under Narcosan are much increased over the controls; muscular discomfort and aches and twitching come earlier in the Narcosan, rise higher, and then diminish equally with those of the controls; the restlessness is practically the same in Narcosan as in the controls, the prostration is during the entire treatment, slightly more noticeable under Narcosan than in the controls. In the previous experimentation with Narcosan it had been believed that controls were not necessary, as

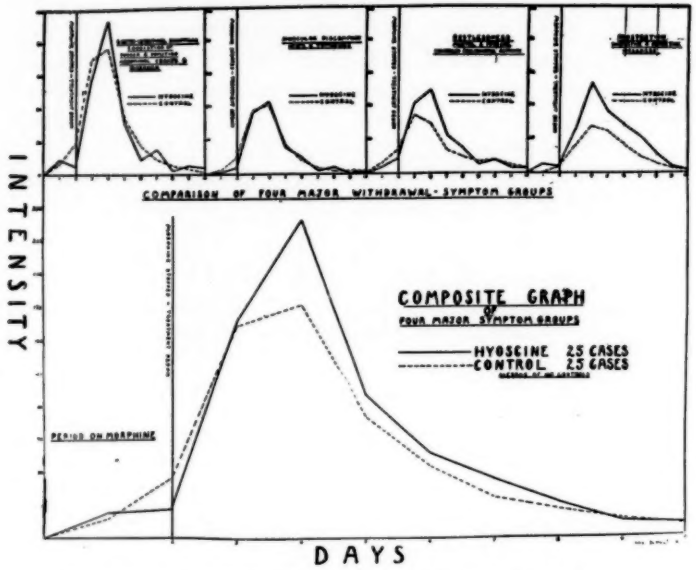
we were familiar with the reduction symptoms of morphine. This proved to be an error of judgment, as it was not realized at that time how self limited the withdrawal symptoms of morphine are. It is evident that in the controls receiving no morphine the symptoms are limited to 72 or 96 hours, and while also it is evident that patients through the intensity of their fear, or through the intensity of the collapse produced by the withdrawal of morphine, may die from sheer nervous collapse and exhaustion, that if morphine is given to prevent this collapse, the patient suffers for 72 or 96 hours, and then there is a rapid reduction of the symptoms.

The insomnia is a very trying symptom after the withdrawal of morphine or the opium narcotics. Whether or not it returns quicker after other drugs have been used than in the controls, has not been recorded, and it is not possible to say.



From the report of the Mayor's Committee on Drug Addiction
New York City, 1929

The next drug to be tried as a treatment was the atropin treatment. It is evident from the curves that those receiving atropin show about the same intensity of symptoms as the controls, but that the recovery from their symptoms is prolonged, and they recovered more slowly from their symptoms under atropin than the controls. The gastro-intestinal reaction is less severe under atropin, their muscular discomfort is not quite as severe, but remains distinctly longer, their restlessness however, is more intense under atropin than in the controls, and their prostration occurs quicker, and is more prolonged, and is slightly more intense.

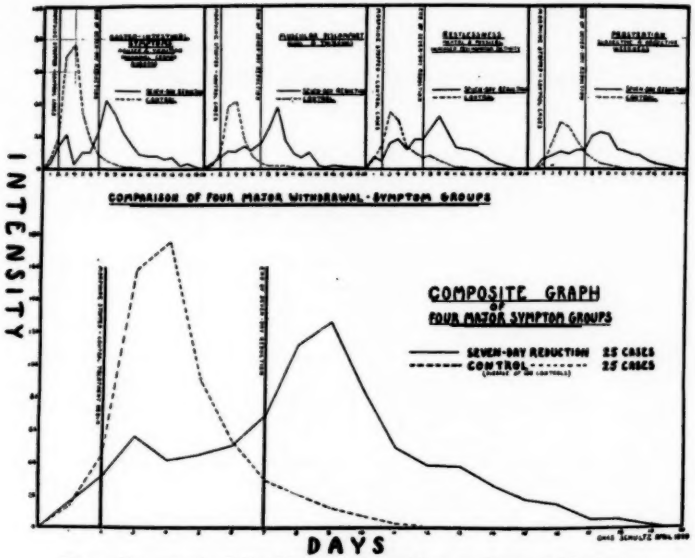


From the report of the Mayor's Committee on Drug Addiction
New York City, 1929

Under hyoscine it is evident that patients suffer more than the controls; their suffering does not begin as soon, it rises to its climax at the end of 48 hours of treatment, and the gastro-intestinal symptoms are markedly increased

under the hyoscine. Their muscular discomfort is practically the same as in the controls, and their restlessness and delirium and mental and physical activity are enormously increased under hyoscine, as well as is their prostration, which is more intense in all periods of the treatment, beginning earlier, and lasting markedly longer.

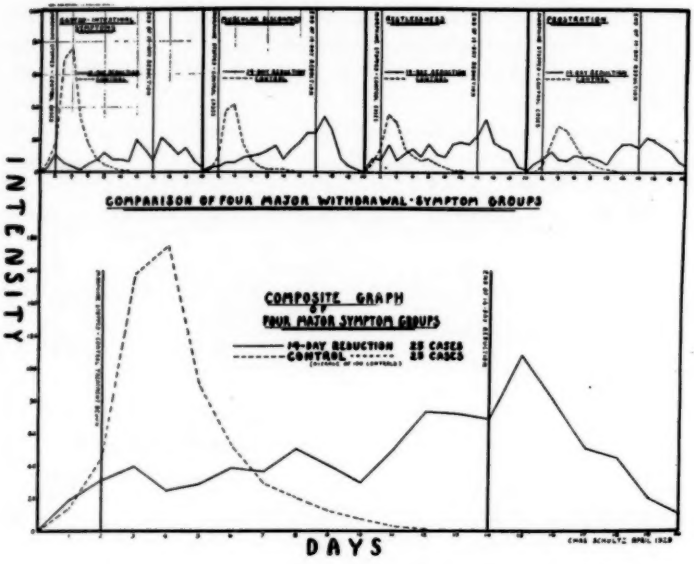
These findings here agree with our previous clinical experience, that patients being taken off under the hyoscine treatment suffer for days, or weeks, from a bodily and mental exhaustion, which is one of the most marked features of the treatment.



From the report of the Mayor's Committee on Drug Addiction
New York City, 1929

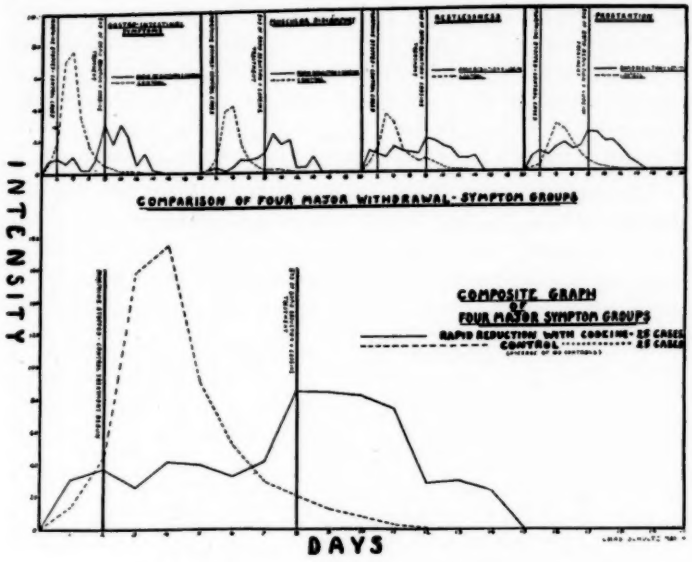
A seven day reduction of morphine patients was tried, in which compared with the controls, the patients suffered materially less, but it was simply a prolongation of their suffering; at the end of a week they were cut off their drug, the withdrawal symptoms came on, but in all with very marked diminution in intensity; the patients, however,

were less easy to care for, they were irritable, mean, more quarrelsome, and more difficult in every way to manage. It is interesting, that after the morphine was cut off from these patients, as the curve shows, they still had about 72 hours of increase of symptoms.



From the report of the Mayor's Committee on Drug Addiction
New York City, 1929

With a 14 day reduction, it is noticeable that the gastro-intestinal symptoms are reduced to a minimum, and their muscular discomfort however, increased, with a rising curve towards the day that their morphine ceased to be given to them at the end of 2 weeks, and then flared up for 48 hours, and rapidly diminished; their restlessness was diminished over the controls, but in a rising curve, until it also disappeared, and their prostration shows a similar curve, but to a less degree.



From the report of the Mayor's Committee on Drug Addiction
New York City, 1929

The next method of treatment was an endeavor to ascertain to what extent codein would control the withdrawal symptoms of morphine. Our clinical experience had taught us that codein does control it, and that codein is so rapidly discharged from the body by the kidneys, that it is not stored up as long as morphine, nor does it possess the narcotic value to the human organism that morphine does. It produces sleep, it alleviates pain to a marked degree, but that curious narcotic value it does not possess, and codein habits are exceedingly rare. In 1700 patients in private practice, all of whom were treated for many different kinds of narcotic addictions and combinations, between the various habit forming drugs of the opium group, or the hypnotic chemical group, it was found that only 10 of them were addicted to codein, and these had acquired it through their endeavor to alleviate pain.

In those taking rapid reduction with codein, the curves show that at the end of the week when the morphine was cut off, there were the regular three days of increase of symptoms after the codein was also cut off, but these symptoms do not rise as high as with the 7 day reduction, nor as high even as the symptoms after a 14 day reduction.

In other words, after the codein has been cut off abruptly the symptoms of the deprivation of the narcotic are not nearly as intense, although the curve is a much broader and blunter one, it suddenly ceases at the end of three days.

Since carrying out these experiments at Bellevue Hospital, it has been found in private practice that if the codein is continued a few days beyond the morphine, and is tapered off rather rapidly, that is taking four or five days to taper the codein off, the symptoms are reduced to a minimum, although there is a sense of irritability and restlessness, but even that is nothing compared with the usual withdrawal symptoms. In other words, the withdrawal symptoms do not go beyond the intensity of the disagreeable restlessness, produced by the cutting off of any narcotic. The gastro-intestinal symptoms disappear, the muscular discomfort is at a minimum, the restlessness is the most marked of the symptoms, but that soon ceases. It is evident therefore, that codein is the only drug that really modifies materially and successfully the withdrawal symptoms of morphine.

The best method of giving this treatment is to calculate the amount of morphine in terms of magendie solution, that a patient is taking in 24 hours; then for a 10 day reduction, diminish the morphine each day about 1/10th. As the morphine is best given at 4 hour intervals, the amount is again divided by 6 as there are 6 doses a day, and the amount of reduction is easily calculated in the number of minims of magendie solution. For instance, if the patient is taking the equivalent to 120 minims a day of magendie solution, he is taking 20 minims every 4 hours; if he is to be reduced 12 minims a day, he is reduced each day at

each 4 hour dose 2 minims of his magendie solution; in this way in the 10 days his magendie solution is brought down to zero. But at the same time that his morphine is reduced, the codein rises from the second day beginning at ½ grain every 4 hours the first day; then a grain every 4 hours the second day; then three grains every 4 hours the third day; four grains every 4 hours the fourth day, and five grains every 4 hours the fifth day, and it is given in solution with the magendie solution. It is wise to use the codein phosphate because of its greater solubility, and if the codein solution is made up in the same form as the magendie solution, it is easily accessible, the desired amounts can be given every 4 hours in the same syringe as the magendie solution, and in this way, the patient does not know when the morphine ceases to be given to him. If this amount of codein is not sufficient, extra doses of codein can be given without harm to the patient, or to his reduction treatment. This large amount of codein is apt to be very constipating, and the patient should receive the amount of cathartics that is necessary to keep the bowels in good action; severe purging is not necessary under this form of treatment, and it is apt to irritate the gastro-intestinal tract. Of course the intestinal tract should be thoroughly cleared out before beginning the treatment; it is also wise to test out the patient for the first 24 or 48 hours of treatment with the amount of morphine that the patient tells you he is taking, to see whether or not he is comfortable. Morphine patients always have the defence reaction, and the fear of being condemned for the amount they take, and are often inaccurate in their statements regarding the amount taken.

The advantage of this codein and morphine treatment is that they suffer so little, there is no occasion for deception, there is no question of a defence reaction for fear of suffering, they get off their treatment without the irritability and fear of suffering that the abrupt methods, and old methods of treatment gave them, so they are very manageable.

Of course if you are dealing with patients that don't want to recover that don't want to be taken off, if you are dealing with a large mass of psychopathic addicts with inadequate personalities, who make no attempt at reconstruction, you will deal with every sort of deception and every known form of resistance, and lack of coöperation. But in private practice with those who have been caught in the toils of the narcotic habit through legitimate medication, or through the existence of pain, this treatment is very easily administered in a hospital, and they can easily be taken off their narcotic.

All morphine patients after they are once off should be reconstructed physically as well as psychologically, and the best method of this is through physical exertion, exercise or work, and after they have become built up into good physical condition, the sooner they get to work and occupation with the re-arrangement of their psychologic distortions, the better and the quicker will they be able to face existence cheerfully without their drug.

Sleep comes to them gradually during their period of treatment, and in the restless period of the few days as their morphine is cut off, or their codein diminished, hypnotics are very difficult to administer. Sodium Amytal and practically all members of the barbituric acid group, if given, in sufficient amounts really to make patients sleep, and influence at all the withdrawal symptoms, must be given in amounts that poison them, and in the endeavor to obtain sleep for these patients, the poisoning from the various hypnotics given, up even to the point of delirium from them, has been a noticeable feature. It is harmful in my opinion, to push hypnotics as far as this, it only adds to the poisoning of the patient, and does not relieve the withdrawal symptoms, but adds to the difficulties of the situation.

Chloral with codein and a little hyoscyamus is again a very useful hypnotic for these patients, but even this cannot be continued too long. Patients must be made to fight out their lack of sleep by endeavoring to read, or by

taking hot baths, or hot packs, which relaxes them. They gradually obtain sleep more and more each night, and if they can be made to take physical exercise followed by tonic baths in the day time, they can, through this physical exertion, obtain their sleep quicker than otherwise. The question is often asked, what can be done for the inadequate group of personalities that form the ever recurrent narcotic addicts in the penal institutions. It is only through forced confinement, and learning some trade, and working at some definite work, that these patients can be trained and reconstructed. Occupational therapy in forced confinement is the best solution. This will slowly regenerate a larger number than can otherwise be done. If at the same time an endeavor is made to take these patients individually to reconstruct their distorted mentalities and distorted views of life, a great deal can be done to diminish their number, but this is a problem which should be undertaken by the State, just the same as the State to-day undertakes the care of the insane. These individuals should be regenerated, and treated like those who are unable to lead a more normal existence, and should be treated, not as if in a boarding house for permanent care, but should be taken and treated like those who are mentally ill, and through persistent treatment can be reconstructed.

It is at present hopeless to take care of certain individuals of both drug addicts and alcoholics without the power to deprive them temporarily of their liberty, and force them through institutional care and reconstruction to reorganize their lives and their mentalities. This at present, the law does not permit, but until it is done, many inadequate personalities will continue to seek their peace of mind in narcotic addiction.

BOOK REVIEWS

Greek Pediatrics. Sophokles Ghinopoulo; Pädiatrie in Hellas und Rom. Jenaer med.-hist. Beitr., Heft 13. 132 pp. 8° Jena, Gustav Fischer, 1930.

F. H. Garrison

The merits of this monograph are that it is the work of a physician to whom spoken or written Greek is a native language, that it covers the extant pediatric material of classical antiquity, and that this material is not dispersed under a chronologic succession of authors, as usual, but systematically arranged under the rubrics ordinarily employed in a text-book of pediatrics. For the first time, in fact, we have a reasoned conspectus of the total pediatric canon of antiquity, always keeping in mind the important point, stressed by Oliver, that the formal, didactic, baseline medicine of classic texts was something quite different from the actualities of practice in any particular period. With this latter phase, the introductory section deals to some extent, albeit with no such lift of broad humanism as informs every page of Sister Mary Rosaria's memorable dissertation on The Nurse in Greek Life (1917). Among the new features are four votive inscriptions from Epidaurus relating to children as patients at the shrine; Favorinus as an apostle of maternal breast nursing, (Aulus Gellius); the *Columna lactaria*, in the *Forum olitorium*, as a bureau of wet-nurses for the poor of Augustan Rome; the dry nurses (*assae nutrices*) of the period, who went in for bottle-feeding; and the lost pediatric text of Demosthenes Philalethes. A rapid survey of the pediatric content of the older writings, with notes on the infantile diseases most prevalent in antiquity, closes this introduction. The next section (Chapter I) deals with Galen's views on the constitution of the child (a phase of humoral physiology); Hippocrates on the viability of the seven and eight-months child, a theme of solemn, serious import among the ancients which has evaporated considerably under the broad humorous light of German folklore (*Siebenmonatskind*); and the opinions of the old

writers on infantile abnormities and deformations, swaddling and general management of the new-born. Chapter II is taken up with an exhaustive survey of infant-nutrition and wet-nursing as expounded by Soranus, Pliny, Celsus and Oribasius. Chapter III, on digestive disorders, gives, among other things, 13 aphorisms from the pseudo-Hippocratic tract on teething, with the views of subsequent writers; Hippocrates, Galen, Aetius and Alexander of Tralles on intestinal worms, and the various remedies employed by the ancients for tape-worm, cholera infantum, infantile diarrhœa and constipation. The same general plan of selection and arrangement of telling material characterizes the subsequent chapters on diathetic and communicable diseases, affections of the respiratory, circulatory, urinary and nervous systems, diseases of the skin, ears and eyes, and infantile surgery. For ready reference, therefore, this pamphlet is the most practical and useful compend of the subject which has yet appeared. What seems dry in the handling becomes of little moment if the material is wanted for research purposes.

The Modern Dance of Death

The Modern Dance of Death. By Peyton Rous. The Linacre Lecture, 1929. 51 pp. 16°. Cambridge, University Press, 1929.

Written in flawless English of archaic sobriety, this thoughtful contribution of Dr. Rous is packed with meaning and not to be overlooked by those who would know the last word of experimental medicine on human and animal reactions to disease and their fatal terminations. Each sentence states a thought or an ascertained fact, and huge segments of recent investigation are summarized with almost algebraic brevity. It is a charming lay-sermon upon the multifarious albums of Holbein type, of which Dr. Warthin has made such an extraordinary collection. The more recent Dances of Death, Dr. Rous notes, particularly those of the post-bellum period, are grim, grisly, *gesucht traurig*, if you will, but nothing like as bitter, hopeless or

fatalistic as Holbein's original conception. Even the *Totentanz* which forms the terminal movement of Brahms' E-minor Symphony (*Thanatos Basileus*) is jocund, virile, exultant, exhilarating. The tremendous upward inflection of the initial eight measures of the *passacaglia* suggests Swinburne's dictum: "Nothing that produces a depressing effect is a true work of art." The *défi* at the end is the *défi* of Beethoven's last quartet (*Muss es sein? Es muss sein!*). To contrast with these moods the ineffable sadness of the *Dies irae* or the *Kyrie* in Bach's B Minor Mass is to realize our author's thesis that, however much they may lament the loss of their loved ones, real people of to-day no longer view their own end with apprehension or anticipatory horror. Something, no doubt, was learned from soldiers marching to their certain doom to the tune of Tipperary. Andreyeff's *Lazarus*, Tolstoi's *Ivan Ilyich*, Rachmaninoff's *Toteninsel* are archaisms. Shelley, Turgenieff, Baudelaire, Wagner, Browning, Bryant, Emerson, Whitman view death with equanimity. W. W. Keen even writes of "the cheerfulness of death," as the logical and physiological term and end of our sublunary existence. And the reason is not far to seek. "We live more than twice as long as did persons in Linacre's time, when to be an old man was well-nigh a profession in itself." We no longer die the deaths of others in thought, because we are too busily absorbed in our own extended span of existence, the length of days lost to our ancestors. Only the aged are concerned with prolonging life, as only the impotent and sterile are concerned about rejuvenation. We begin our Dance with Death before birth and it persists "from the womb to the tomb." Life is become less a battle and more like Mignon's blindfold dance among the eggs. As Sudhoff pointed out in his Johns Hopkins address, many diseases, which mowed down our ancestors like the scythe of the Grim Reaper, have now acquired an historical status as museum specimens. To indicate some limitations of this historic process is one object of Dr. Rous's lecture.

To begin with, there is no change in the ultimate pathology of mild or aborted diseases, and the sequelae of disease

to-day are ofttimes those to which the shorter-lived people of the past were not exposed. "Abortive attacks differ from typical ones mainly in the extent and severity of the lesions, not in their intrinsic character." Hyperimmunizations and anaphylaxis become negligible as sera are purified, but allergy is now known to play a large rôle in the ordinary manifestations of tuberculosis, syphilis and actinomycosis. Neoplasms yield to irradiation but cancer is still an indecipherable interaction between the body and rebellious growing tissue. The sequelae, if any, in anæmics healed by liver extract and diabetics preserved by insulin, are yet to materialize. "Insulin death as new pathology is very real." Beyond the fact that there is more of it and that more successful, surgery, so far, has only italicized what ordinary pathologic processes made plain, e.g., that myxœdema and tetany are due to thyroid and parathyroid insufficiency respectively. Chopping out tonsils, gall-bladders, ovaries, uteri as "prophylaxis" are fashions that spend themselves. Artificial lungs, livers and kidneys that will work inside the body are yet to be invented. Transplants atrophy and fail because the organs and their prospective hosts are found to have biological individualities, all their own, like human beings or the red cells of that *"ganz besonderer Saft,"* their blood. Transplanted tumor cells survive "by aggression" only. Transplants, even within the species, are passive agents at the mercy of their bodily hosts, and cells of residual fragments of highly specialized organs will not ordinarily proliferate to reproduce the total structural arrangement, as with bone grafts. With the exception of the fragmentary liver, in which "reconstitution is functionally perfect," halved kidneys or lungs merely grow bigger, and even the new liver is a fragile mycelium, becoming like a blood clot in the end. Tissue regeneration, as in the thyroxinized cretin, is conditioned by "dormant potentialities," the nature of which we do not know. The liver, the suprarenals, the small intestines exist in proportions far in excess of functional needs, yet the 1/20 of adrenal cortex necessary to sustain life will atrophy through its incapacity to pro-

liferate. Physiological surgery has thus become a functional tester of prime importance in the matter of delimiting the biological potentialities of organs and tissues. Under the altered physiology producible by surgery, the organism merely reverts to well-worn pathways and never strikes into new ones. But this fact was already known to those initial exponents of "altered physiology," the pathologists. "For morbid anatomy is merely the footprint left by physiology." Every accessible organ has been tampered with, surgically and otherwise, from the days when prehistoric man punished the involuntary muscle of his intestines with indigestible foods, but nothing particularly new has transpired. In the witticism of O. W. Holmes, a guileless young thing will eat the proferred Hot-Cross Bun; an experienced, hard-boiled oldster will reject it. Acquired immunity is seen to be an expansile adaptation of the system to "menaces which increase by geometrical progression as the harmful micro-organisms divide." This is the only difficult adaptation to which the human frame has been subjected throughout historic time. By comparison, adaptations to heat, cold, atmospheric pressure, aeroplane and caisson life are so facile as to be negligible. Such potentialities of the organism as increase in size (of body and organs) *viâ* endocrine injections are perceived at once to be worse than worthless. Man's conquest of the communicable infections has been abrupt and comprehensive. The persistence of these diseases through his past was obviously due to his own inability to think. Gout and all the diseases due to overeating disappeared in famine-ridden areas during the World War and diabetes is seen to be a penalty of obesity. Most diseases, then, are adventitious as far as mere mind is concerned and should be quite within the control of advancing human reason. In other words, they are preventable in theory, but actually "occupational," with reference to a peculiar constitution occupied with functioning along predestined lines. Here, mind and body are seldom at one. Humanity at large, says Rous, is not isocephalic. Minds of mystic type will continue to be romantic and morbid, where rational-

ists conceive most diseases to be avoidable. The most fatal diseases to-day are no longer tubercle, syphilis, diphtheria, typhoid and infantile diarrhœa but heart disease, nephritis, apoplexy, cancer and pneumonia. When these shall have been conquered, the New Dance of Death will be that of the senile organism with diseases incident to a newer longevity, diseases which "had few targets in the past." When that millennium is reached, "the loud hymns of the physiologist in praise of the body will have died away." The search for an elixir of life will be as rabid as formerly, but Dr. Rous concludes that youth will be less inclined to "live dangerously" as to physical or moral health and the mind will eventually acquire its place in the sun. "The new science of living long and well will bring with it a science of dying, to supplement that most difficult of arts."

F. H. GARRISON.

THIRD ANNUAL GRADUATE FORTNIGHT OF THE NEW YORK ACADEMY OF MEDICINE

OCTOBER 20 TO 31, 1930

"Medical and Surgical Aspects of Acute Bacterial Infections"

Evening meetings at the Academy. The evening meetings will begin promptly at 8:30. No tickets of admission will be required.

Exhibit. A large exhibit of anatomical, bacteriological and pathological specimens and research material bearing upon the various aspects of the subjects discussed at the evening meetings, will be held at the Academy during the Fortnight, and will be arranged by Dr. Louis Gross. Many of the exhibits will be demonstrated.

Tickets for afternoon clinics. Attendance at the afternoon hospital clinics which have been arranged for the Fortnight will be controlled by clinic tickets, for which advance registration is requested. Clinic tickets will be mailed to those who make reservations or may be called for at the Academy (Registration Bureau).

Additional clinics. Besides the specially arranged hospital programs, the regularly announced non-operative clinics and clinical conferences will be held as usual, *both mornings and afternoons* during the Fortnight, in over forty teaching hospitals of the city. No registration or tickets will be required for these clinics.

A complete program announcing clinics in hospitals, names of clinicians, and the program of evening meetings to be held at the Academy will be mailed to the Fellows and may also be obtained on request.

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A FIFTH SERIES OF LECTURES ON SUBJECTS OF SPECIAL INTEREST TO THE PRACTITIONER

to be held on

FRIDAY AFTERNOONS

at four-thirty o'clock

The profession generally is invited to attend

1930

NOVEMBER 7

Epilepsy and the convulsive state.

Foster Kennedy, Professor of Neurology, Cornell University Medical College.

"Epilepsy" in need of definition. Considerations regarding its mechanism. The vascular basis of convulsions. Theories regarding causation. Varieties of epileptic explosion. Prognosis. Treatment.

NOVEMBER 14

Carcinoma of the colon.

Frank H. Lahey, Surgeon-in-Chief to the Baptist Hospital, Surgeon to the New England Deaconness Hospital, and Director of Surgery at the Lahey Clinic, Boston.

Its earliest symptoms, its incidence in the cecum, transverse colon and descending colon, and the relation of its symptoms to its location. The effect of intestinal obstruction and its mortality, and also measures to overcome intestinal obstruction as well as operative procedures for its safe removal.

NOVEMBER 21

The treatment of pelvic infections.

George Gray Ward, Professor of Obstetrics and Gynecology, Cornell University Medical College, Chief Surgeon, Woman's Hospital.

Pelvic infection in women, the result of septic, Neisserian or tuberculous organisms is responsible for woes and sorrows of a large proportion of gynecological patients.

Acute pelvic inflammatory lesions are generally better treated expectantly than radically; surgery only indicated in curing the sequelae of the disease and not the infection itself. Parametritis and perimetritis.

The indiscriminate use of the curet as an etiological factor. Treatment. Results at the Woman's Hospital.

DECEMBER 5

The thyroid.

Nellis B. Foster, Associate Professor of Medicine, Cornell University Medical College.

Its range of physiological control and the clinical syndromes resulting from abnormality in this control.

DECEMBER 12

The therapeutics of ultra-violet light.

Alfred F. Hess, New York.

What is known in regard to the value of ultra-violet irradiation in the prevention and cure of various disorders of adults as well as children. Attempt to fix limitations of its indications. The method of its employment and possible harmful effects.

DECEMBER 19

Occupational and industrial diseases.

Miss Frances Perkins, State Industrial Commissioner, Albany.

1931

JANUARY 9

Treatment of anemia.

George R. Minot, Professor of Medicine, Harvard University; Director of Thorndike Memorial Laboratory and Associated Medical Services, Boston City Hospital.

Advances in the treatment of pernicious anemia. The importance of abnormal diets and alteration of gastro-intestinal functions in the production of simple anemia. The value of iron and food in the treatment of certain types of anemia. Consideration of other therapeutic procedures.

JANUARY 16

Diet in Disease.

Eugene F. Du Bois, Professor of Medicine, Cornell University Medical College, Director Second Medical Division, Bellevue Hospital.

General principles concerned in planning diets of adults in the clinic, total calories, proteins, fats, carbohydrates, vitamines, salts and roughage.

JANUARY 23

Roentgenographic delineation of the urogenital tract.

Joseph F. McCarthy, Director, Department of Urology, New York Post-Graduate Medical School and Hospital.

Newer technical methods will be demonstrated. The role of intravenous pyelography in its relation to instrumental procedure, and in turn, to the general practitioner, will also be considered.

JANUARY 30

Certain aspects of syphilitic cardiac disease.

Edward P. Carter, Resident Lecturer in Medicine, Johns Hopkins University; Associate Physician Johns Hopkins Hospital, Baltimore.

The clinical diagnosis, prognosis and treatment with especial emphasis upon the significant clinical features of the condition.

FEBRUARY 6

Osteomyelitis.

Dean Lewis, Professor of Surgery, Johns Hopkins University, Baltimore.

FEBRUARY 13

Tuberculosis of bones and joints—diagnosis and treatment.

William S. Baer, Clinical Professor of Orthopedic Surgery, Johns Hopkins University, Baltimore.

FEBRUARY 20

Cancer as a complication of skin diseases.

Joseph J. Eller, Assistant Professor of Dermatology, New York Post Graduate Medical School and Hospital.

Based on clinical, microscopic and therapeutic studies of over twenty different skin diseases which are forerunners of cancer. The possibility and probability as well as the frequency with which cancer follows these conditions will be considered separately and in their approximate order of importance. The early recognition by the general practitioner and the judicious treatment of those dermatoses which may lead to cancer would aid in lowering the mortality rate in this disease.

FEBRUARY 27

More common diseases of the teeth and jaws.

Theodor Blum, Oral Surgeon, Department of Dentistry, Sydenham Hospital.

Oral focal infection, teeth root amputations, impacted teeth, tumors, facial pains and trifacial neuralgia.

Vincents infection.

Raymonde A. Albray, D.D.S., Consulting Oral Surgeon, Hospital of St. Barnabas, Newark.

Symptoms of acute Vincents infection; importance of early diagnosis; chronic Vincents infection; communicability; bacteriology; treatment of acute and chronic types; tests to determine effect of treatment; various remedies discussed.

MARCH 6

Practical advances in the study of the liver and its diseases.

Reuben Ottenberg, Associate Physician to the Mount Sinai Hospital.

In the last ten years there has been great advance in the knowledge of liver functions. This will be reviewed and its clinical applications pointed out.

MARCH 13

Silicosis; its present aspect.

Henry K. Pancoast, Professor of Roentgenology, University of Pennsylvania Medical School; Roentgenologist to Hospital of the University of Pennsylvania.

The hazards attending the inhalation of large quantities of dust containing a high percentage of silica are worthy of serious attention, especially with a view of attempting to reduce them. The pathology of the condition and its roentgenologic aspects.

MARCH 20

Arthritis.

Ralph Pemberton, Physician to The Presbyterian Hospital, Philadelphia; Associate Professor of Medicine, Graduate School of Medicine, University of Pennsylvania.

Importance of the problem. Recent developments bearing on it. Types of the disease. Outline of pathological background from which the disease springs. The immediately exciting factors. The contributory factors. Importance of considering the many influences operative. Importance of restoring deranged physiology as well as re-

moving the initial cause. Encouraging results following broad-gauge treatment. Extent of existing invalidism from arthritis not justified. Prevention.

MARCH 27

Allergy in children.

Bret Ratner, Clinical Professor of Pediatrics and Lecturer in Immunology, New York University and Bellevue Hospital Medical College.

Diagnosis and management of asthma, eczema and urticaria in infancy and childhood. Its etiology indicating that these syndromes are acquired in utero and in early infancy. History taking, protein skin tests, blood chemistry, cytology. Plan for study and of preventive measures.

APRIL 10

The early diagnosis and treatment of poliomyelitis.

Josephine B. Neal, Clinical Professor of Neurology, Columbia University.

The clinical picture of early stages of poliomyelitis. Differential diagnosis. The value of spinal fluid examination. A discussion of treatment.

APRIL 17

Problems of gastro-enterology today.

Walter C. Alvarez, Associate Professor of Medicine, University of Minnesota, The Mayo Foundation.

In about two-thirds of the patients seen with gastro-intestinal complaints an exact diagnosis cannot be made. These cases now challenge the ability of every thoughful gastro-enterologist. In many instances the troubles complained of are nervous in origin but in others organic disease must be present. It is in this group that we must gradually pick out and identify new syndromes.

RECENT ACCESSIONS TO THE LIBRARY

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Bolduan, C. F. Applied bacteriology for nurses. 6. ed.
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DEATHS OF FELLOWS OF THE ACADEMY

Archibald M. Campbell, M.D., 36 South First Avenue, Mount Vernon, N. Y.; graduated in medicine from the College of Physicians and Surgeons, New York City, in 1873; elected a Fellow of the Academy January 2, 1890; died, August 31, 1930. Dr. Campbell was a member of the American Medical Association, Medical Society of the State of New York, Society of Medical Jurisprudence, the Medical Society of Westchester County, Mount Vernon Medical Society and the Jenkins Medical Society in Yonkers. He was at one time President of the Medical Board and consulting physician and surgeon to the Mount Vernon Hospital. He was also consulting physician and surgeon of the Home for Incurables at Fordham, and attending physician at the New York Infant Asylum.

Asa Barnes Davis, M.D., 44 Park Avenue, New York City; graduated in medicine from the College of Physicians and Surgeons, New York City, in 1889; elected a Fellow of the Academy May 6, 1909; died, August 13, 1930. At the time of his death and since 1918 Dr. Davis was Chief Surgeon of the Lying-In Hospital, and had been connected with that Institution continuously since 1890. He was a Fellow of the American Medical Association and of the American College of Surgeons, a member and one time president of the American Association of Ostetricians, Gynecologists and Abdominal Surgeons.

H. Beeckman Delatour, M.D., 73 Eighth Avenue, Brooklyn; graduated in medicine from the College of Physicians and Surgeons, New York City, in 1887; elected a Fellow of the Academy April 5, 1900; died, August 24, 1930, in Paris. Dr. Delatour was a Fellow of the American College of Surgeons, and member of the American Medical Association, International Surgical Association, American Surgical Association, Brooklyn Surgical Society and the New York Surgical Society. He was Surgeon-in-Chief to St. John's Hospital, Senior Surgeon, Norwegian Deaconess Hospital, and Consulting Surgeon to Methodist Episcopal Hospital, St. Mary Hospital, Jamaica Hospital, Babylon Hospital, Rockaway Beach Hospital and South Side Hospital.